630.7
T31m
No.1532

~~NHX~~ Stas

MP 1532
April 1983

THE TEXAS AGRICULTURAL EXPERIMENT STATION / Neville P. Clarke, Director
The Texas A&M University System / College Station, Texas

NATURAL HISTORY SURVEY
MAY 13 1983
LIBRARY

# CONTROLLING WEEDS IN SOYBEANS WITH POSTEMERGENCE HERBICIDES

Allen F. Wiese, D. E. Lavake, and E. W. Chenault*

## Summary

Blazer gave good control of pigweed in soybeans in a 4-year test from 1979 to 1982. Poast, Hoelon, CGA 82725, and Fusilade controlled barnyardgrass in these studies. Poast, Fusilade, CGA 82725, SC 1058, and DowCo 453 at 0.25 to 0.5 pound per acre gave excellent control of johnsongrass in sprinkler irrigated soybeans.

## Introduction

Certain annual grass and broadleaf weeds can be a problem in soybeans [Glycine max (L.) Merr.]. In the Panhandle of Texas, pigweed [primarily Amaranthus hybridus (L.) and A. palmeri S. Wats. ] and barnyardgrass [Echinochloa crus-galli (L.) Beauv.] are the most likely offenders. Problems develop if growers decide not to use preplant or preemergence herbicides or when these treatments fail. Johnsongrass [Sorghum halepens (L.) Pers.] is a perennial pest in soybean fields because present methods of weed control in the crop had little effect on the pest.

The purpose of these studies was to evaluate several postemergence herbicides for controlling pigweed, barnyardgrass, and perennial johnsongrass in soybeans. In addition, studies were conducted to determine the best time of day and barnyardgrass size for treatment with postemergence herbicides.

---

* Professor and Research Associates, Texas Agricultural Experiment Station, Bushland, Texas 79012. Cooperative research with Agricultural Research Service, U.S. Department of Agriculture, Conservation and Production Research Laboratory, Bushland, Texas 79012.

Keywords: johnsongrass, barnyardgrass, pigweed, acifluorfen, sethoxydim, diclofop, fluazifop, Poast, Blazer, Hoelon, Fusilade

Mention of a trademark or a proprietary product does not constitute a guarantee or warranty of the product by the Texas Agricultural Experiment Station and does not imply its approval to the exclusion of other products that also may be suitable.

University of
Illinois Library
at Urbana-Champaign
Oak Street

## Materials and Methods

Studies to control annual weeds in soybeans were conducted at the USDA Conservation and Production Laboratory, Bushland, Texas, in 1979, 1980, 1981, and 1982. Johnsongrass control research was conducted on the JoAnne Janhsen farm near Wilderado, Texas. Soil at both locations was Pullman clay loam containing approximately equal parts of sand, silt, and clay, and 1.5 percent organic matter and having a pH of 6.5%. At Bushland, soybeans were furrow irrigated. A preplant and one or two postemergence irrigations were applied to encourage vigorous soybean growth, as well as weed emergence and growth. Yields of soybeans were not obtained in studies with annual weeds.

In studies with annual weeds, directed and over-the-top sprays were applied simultaneously to one-row plots 25 feet long. Rate of carrier was 52 gallons per acre. One flat fan nozzle was used to spray a 20-inch band over-the-top. Nozzle height was determined by weed height. Directed sprays were applied on the lower 3 inches of the crop and weeds with one flat fan nozzle on each side of the row. Fans were set horizontal to the soil surface and covered a 20-inch band.

The soybean field infested with johnsongrass was irrigated with a center pivot through the growing season until harvest. Broadcast sprays on soybeans infested with johnsongrass were applied in 26 gallons per acre of water carrier to plots four rows wide and 30 feet long.

Herbicides and rates applied are shown in Tables 1-10, along with information on crop and weed size, rainfall, and irrigation. All herbicide treatments were replicated three times.

## Results

### Annual Weed Control

Control of barnyardgrass in 1979, 1980, 1981, and 1982 with postemergence over-the-top sprays is shown in Table 1. Blazer controlled only broadleaf weeds and had little effect on grass weeds. Poast at 0.25 pound per acre gave excellent control of 6-inch barnyardgrass in 1979 when 0.7 inch of rain fell in the 3 weeks after treatment. In 1980, when no rain fell after treatment, control of 2-inch grass with Poast was poor compared to 1979. In 1982, control with 0.25 pound per acre of Poast was 100 percent when barnyardgrass was 2 inches tall and soil moisture was excellent. Control of barnyardgrass with Poast mixed with Blazer was up to 100 percent when 0.5 pound per acre of each was used.

CGA 82725, an experimental herbicide, at 0.38 pound per acre gave 97 percent control of barnyardgrass in 1981 and 93 percent with 0.5 pound per acre in 1982. Control in 1980 was 70 percent or less with up to 0.75 pound per acre. Mixtures of CGA 82725 and Blazer gave good control of barnyardgrass in 1980 and excellent control in 1981 and 1982. In 1981, Fusilade, another new postemergence herbicide, gave 92 percent control of barnyardgrass at 0.38

pound per acre when mixed with 0.25 pound per acre of Blazer.

Blazer at 0.25 to 0.5 pound per acre gave 58 to 100 percent control of pigweed with over-the-top sprays (Table 2). Poast and CGA 82725 had no effect on this weed. Combining Blazer with Hoelon, Poast, CGA 82725, or Fusilade gave control of pigweed equal to when Blazer was sprayed alone. Poorest control of pigweed was obtained in 1980 when no rain fell for 3 weeks after spraying. Outstanding control was obtained in 1982 when pigweed was small and soil moisture excellent.

Soybean injury was estimated visually 3 to 7 weeks after spraying (Table 3). Blazer caused some stunting in 1981, but by fall the soybeans had outgrown the injury. Poast, CGA 82725, or Fusilade mixed with Blazer caused about the same injury as Blazer applied alone.

Comparisons of directed and over-the-top sprays for control of barnyardgrass and pigweed in soybeans are shown in Tables 4 and 5. Treatments shown were applied for at least 2 years. Control of barnyardgrass was better with directed sprays (Table 4). With the seven treatments shown in the table, control of barnyardgrass averaged 73 percent for directed sprays and 64 percent for over-the-top sprays. Although not shown in the table, this advantage occurred each year of the study.

The advantage of directed sprays for pigweed control was only 3 percent better than over-the-top treatments. Blazer and Poast alone and Hoelon mixed with Blazer gave less control of pigweed as a directed spray than when applied over-the-top. Directed sprays were advantageous for mixtures of Poast or CGA 82725 with Blazer.

In another study, three herbicides were applied to barnyardgrass that was either 3 - 4 or 10 - 14 inches tall (Table 6). Poast, CGA 82725, and Fusilade applied at 0.19 pound per acre to short grasses under very wet soil conditions gave 90 to 100 percent control. In taller grass, control did not exceed 43 percent.

Morning applications gave slightly better barnyardgrass control than treatments later in the day (Table 7). Lower temperature and higher relative humidity in the morning may have caused the increase.

## Johnsongrass Control

In 1981 herbicides were applied when johnsongrass was either 8 or 30 inches tall (Table 8). Fusilade at 0.5, Poast at 0.38, and CGA 82725 at 0.38 pound per acre gave 98 to 100 percent control of 8-inch johnsongrass. When application was delayed and 30-inch grass treated, maximum control with up to 0.75 pound per acre of the herbicides was 78 percent.

In 1982, 15-inch johnsongrass was treated under ideal growing conditions. Unfortunately, one week later hail shredded the crop and weeds to 4 inches tall. The field was disked and replanted. At harvest of the new crop, johnsongrass regrowth was controlled 100, 87, 81, 69, and 87 percent by 0.25

pound per acre of Fusilade, CGA 82725, Poast, SC 1058, and DowCo 453, respectively.

Soybean injury in these studies from competing johnsongrass is given in Table 9. In 1981, when 8-inch Johnsongrass was controlled, yields were estimated at 40 bushels per acre. Untreated checks yielded 27 percent less. When treatments were applied to 30-inch grass, the yield advantage over the untreated checks was only 5 to 10 percent except for Poast at 0.5 and CGA-82725 at 1 pound per acre. In 1982, the Johnsongrass stand was thinner than in 1981 and untreated plots had only a 13 percent reduction. Because of late replanting, the soybean yield was about 20 bushels per acre. Effective treatments eliminated competition from the johnsongrass.

## Discussion

These studies indicate that postemergence herbicides can control both pigweed and annual grass weeds in soybeans. While there are several effective and economical preplant and preemergence herbicides available to soybean growers, the new postemergence herbicides will help save a crop if earlier treatments fail.

Johnsongrass, being extremely competitive and difficult to control in soybeans, escapes most preplant and preemergence herbicide treatments. Modest to thick johnsongrass stands can reduce soybean yields 30 to 50 percent. A 30 percent yield loss in a 40 bushel per acre crop is 13 bushels per acre. Based on 1982 prices, postemergence chemical control of johnsongrass would cost $15 to $25 per acre. This investment would be returned several times over by increased soybean yield.

Johnsongrass in soybeans (left) and weed free soybeans with postemergence application of Poast, Fusilade, CGA 82725, or DowCo 453.

Table 1. CONTROL OF BARNYARDGRASS IN SOYBEANS WITH POSTEMERGENCE OVER-THE-TOP SPRAYS

| Herbicide | lb/A (ai) | Percent barnyardgrass control | | | |
|---|---|---|---|---|---|
| | | 1979 | 1980 | 1981 | 1982 |
| Blazer + | 0.25 | 0 | -- | 30 | 67 |
| 0.5% Ag 98 | 0.38 | 0 | -- | -- | -- |
| | 0.5 | 0 | 13 | 40 | 88 |
| Poast + | 0.25 | 95 | 30 | -- | 100 |
| 1 qt/A Agridex | 0.38 | -- | -- | -- | -- |
| | 0.5 | 100 | 40 | -- | -- |
| Hoelon + Blazer + | 0.75 + 0.25 | 47 | 27 | -- | -- |
| 0.5% Ag 98 | 1 + 0.25 | 93 | 23 | 38 | 99 |
| | 1 + 0.38 | 47 | -- | -- | -- |
| | 1 + 0.5 | -- | -- | 10 | 86 |
| Poast + Blazer + | 0.3 + 0.25 | -- | -- | 73 | -- |
| 1 qt/A Agridex | 0.3 + 0.5 | -- | 60 | -- | -- |
| | 0.5 + 0.25 | 100 | -- | -- | -- |
| | 0.5 + 0.5 | -- | 60 | 93 | -- |
| | 1.0 + 0.38 | 90 | -- | -- | -- |
| CGA 82725 + | 0.25 | -- | 47 | -- | -- |
| 1 qt/A Agridex | 0.38 | -- | -- | 97 | -- |
| | 0.5 | -- | 60 | -- | 93 |
| | 0.75 | -- | 70 | -- | -- |
| CGA 82725 + Blazer + | 0.25 + 0.25 | -- | 70 | 90 | 100 |
| 0.5% Ag 98 | 0.38 + 0.25 | -- | -- | 100 | 100 |
| | 0.5 + 0.25 | -- | 83 | 96 | 100 |
| | 0.5 + 0.5 | -- | -- | 96 | 100 |
| | 0.75 + 0.25 | -- | 77 | -- | -- |
| Blazer + Fusilade + | 0.25 + 0.125 | -- | -- | 48 | -- |
| 0.1% Ag 98 | 0.25 + 0.25 | -- | -- | 55 | -- |
| | 0.25 + 0.38 | -- | -- | 92 | -- |
| | 0.25 + 0.5 | -- | -- | 92 | 87 |
| Weed height, inches | | 6 | 2 | 1 | 2 |
| Soil moisture | | fair | fair | excellent | excellent |
| Rain + irrigation from treatment to scoring, inches | | 0.7 | 0.0 | 14.7 | 4.7 |
| Weeks from treatment to scoring | | 3 | 3 | 7 | 4 |

Table 2. PIGWEED CONTROL IN SOYBEANS WITH POSTEMERGENCE OVER-THE-TOP SPRAYS OF HERBICIDES IN SOYBEANS

| Herbicide | lb/A (ai) | Percent pigweed control 1979 | 1980 | 1981 | 1982 |
|---|---|---|---|---|---|
| Blazer + 0.5% Ag 98 | 0.25 | 74 | -- | 63 | 99 |
| | 0.38 | 80 | -- | -- | -- |
| | 0.5 | 89 | 58 | 89 | 100 |
| Poast + 1 qt/A Agridex | 0.25 | 35 | 0 | -- | 59 |
| | 0.38 | -- | 0 | -- | -- |
| | 0.5 | 10 | 0 | -- | -- |
| Hoelon + Blazer + 0.5% Ag 98 | 0.75 + 0.25 | 58 | 43 | -- | -- |
| | 1 + 0.25 | 70 | 37 | 87 | 95 |
| | 1 + 0.38 | 77 | -- | -- | -- |
| | 1 + 0.5 | -- | -- | 95 | 100 |
| Poast + Blazer + 1 qt/A Agridex | 0.3 + 0.25 | -- | -- | 83 | -- |
| | 0.3 + 0.5 | -- | 40 | -- | -- |
| | 0.5 + 0.25 | 72 | -- | -- | -- |
| | 0.5 + 0.5 | -- | 33 | 90 | -- |
| | 1 + 0.38 | 70 | -- | -- | -- |
| CGA 82725 + 1 qt/A Agridex | 0.25 | -- | 0 | -- | -- |
| | 0.38 | -- | -- | 7 | -- |
| | 0.5 | -- | 0 | -- | 7 |
| | 0.75 | -- | 0 | -- | -- |
| CGA 82725 + Blazer + 0.5% Ag 98 | 0.25 + 0.25 | -- | 57 | 43 | 93 |
| | 0.38 + 0.25 | -- | -- | 53 | 90 |
| | 0.5 + 0.25 | -- | 40 | 63 | 83 |
| | 0.5 + 0.5 | -- | -- | 73 | 97 |
| | 0.75 + 0.25 | -- | 80 | -- | -- |
| Blazer + Fusilade + 0.1% Ag 98 | 0.25 + 0.125 | -- | -- | 47 | -- |
| | 0.25 + 0.25 | -- | -- | 50 | -- |
| | 0.25 + 0.38 | -- | -- | 70 | -- |
| | 0.25 + 0.5 | -- | -- | 63 | 99 |
| Weed height inches | | 8 | 4 | 1 | 2 |
| Soil Moisture | | fair | fair | excellent | excellent |
| Rain + irrigation from treatment to scoring, inches | | 0.7 | 0.0 | 14.7 | 4.7 |
| Weeks from treatment to scoring | | 3 | 3 | 7 | 4 |

Table 3. SOYBEAN INJURY AFTER POSTEMERGENCE OVER-THE-TOP HERBICIDE SPRAYS

| Herbicide | lb/A (ai) | Percent soybean injury | | | |
|---|---|---|---|---|---|
| | | 1979 | 1980 | 1981 | 1982 |
| Blazer + | 0.25 | 0 | -- | 15 | 7 |
| 0.5% Ag 98 | 0.38 | 0 | -- | -- | -- |
| | 0.5 | 0 | 18 | 22 | 0 |
| Poast + | 0.25 | 0 | 0 | -- | 0 |
| 1 qt/A Agridex | 0.38 | -- | -- | -- | -- |
| | 0.5 | 0 | 0 | -- | -- |
| Hoelon + Blazer + | 0.75 + 0.25 | 12 | 20 | -- | -- |
| 0.5% Ag 98 | 1 + 0.25 | 8 | 7 | 18 | 7 |
| | 1 + 0.38 | 13 | -- | -- | -- |
| | 1 + 0.5 | -- | -- | 33 | 3 |
| Poast + Blazer + | 0.3 + 0.25 | -- | -- | 15 | -- |
| 1 qt/A Agridex | 0.3 + 0.5 | -- | -- | 26 | -- |
| | 0.5 + 0.25 | 20 | -- | -- | -- |
| | 0.5 + 0.5 | -- | 6 | 20 | -- |
| | 1 + 0.38 | 17 | -- | -- | -- |
| CGA 82725 + | 0.25 | -- | 0 | -- | -- |
| 1 qt/A Agridex | 0.38 | -- | -- | 0 | -- |
| | 0.5 | -- | 0 | -- | 0 |
| | 0.75 | -- | 0 | -- | -- |
| CGA 82725 + Blazer + | 0.25 + 0.25 | -- | 7 | 3 | 7 |
| 0.5% Ag 98 | 0.38 + 0.25 | -- | -- | 8 | 7 |
| | 0.5 + 0.25 | -- | 3 | 5 | 30 |
| | 0.5 + 0.5 | -- | -- | 10 | 18 |
| | 0.75 + 0.25 | -- | 20 | -- | -- |
| Blazer + Fusilade + | 0.25 + 0.125 | -- | -- | 7 | -- |
| 0.1% Ag 98 | 0.25 + 0.25 | -- | -- | 13 | -- |
| | 0.25 + 0.38 | -- | -- | 10 | -- |
| | 0.25 + 0.5 | -- | -- | 5 | -- |
| | 0.5 + 0.25 | -- | -- | -- | 30 |
| Soybean height, at treatment, inches | | 5 | 5 | 6 | 7 |
| Weeks from treatment to scoring | | 3 | 3 | 7 | 4 |

Table 4. BARNYARDGRASS CONTROL WITH DIRECTED OR OVER-THE-TOP SPRAYS APPLIED FOR TWO OR THREE YEARS

| Herbicide | lb/A (ai) | Percent barnyardgrass control | |
|---|---|---|---|
| | | Directed | Over-the-top |
| Blazer + 0.5% Ag 98 | 0.5 | 32 | 18 |
| Poast + 1 qt/A Agridex | 0.25 | 75 | 63 |
| | 0.5 | 70 | 70 |
| Hoelon + Blazer + 0.5% Ag 98 | 1 + 0.25 | 70 | 51 |
| Poast + Blazer + 1 qt/A Agridex | 0.5 + 0.5 | 82 | 77 |
| CGA 82725 + Blazer + 0.5% Ag 98 | 0.25 + 0.25 | 88 | 80 |
| | 0.5 + 0.5 | 95 | 90 |
| Average | | 73 | 64 |

Table 5. PIGWEED CONTROL WITH DIRECTED AND OVER-THE-TOP SPRAYS APPLIED FOR TWO OR THREE YEARS

| Herbicide | lb/A (ai) | Percent pigweed control | |
|---|---|---|---|
| | | Directed | Over-the-top |
| Blazer + 0.5% Ag 98 | 0.5 | 74 | 79 |
| Poast + 1 qt/A Agridex | 0.25 | 14 | 18 |
| | 0.5 | 7 | 5 |
| Hoelon + Blazer + 0.5% Ag 98 | 1 + 0.25 | 57 | 65 |
| | 1 + 0.25 | 57 | 65 |
| Poast + Blazer + 1 qt/A Agridex | 0.5 + 0.5 | 72 | 62 |
| CGA 82725 + Blazer + 0.5% Ag 98 | 0.25 + 0.25 | 59 | 50 |
| | 0.5 + 0.25 | 67 | 52 |
| Average | | 50 | 47 |

Table 6. EFFECT OF POSTEMERGENCE HERBICIDES ON CONTROL OF DIFFERENT SIZED BARNYARDGRASS[a]

| Herbicide | lb/A (ai) | Percent control<br>Barnyardgrass height, inches<br>3 - 4 | <br><br>10 - 14 |
|---|---|---|---|
| Poast + 1 qt/A Agridex | 0.19 | 100 | 33 |
| CGA 82725 + 1 qt/A Agridex | 0.19 | 100 | 43 |
| Fusilade + 0.25% Ag 98 | 0.19 | 90 | 37 |
| Average | | 97 | 38 |

[a] Applied 8-31-81 and 9-14-81. The soil was very wet.

Table 7. EFFECT OF TIME OF DAY ON BARNYARDGRASS CONTROL[a]

| Herbicide | lb/A (ai) | Percent control<br>Application time<br>11:30 a.m. | <br><br>3:00 p.m. | <br><br>5:30 p.m. |
|---|---|---|---|---|
| Poast + 1 qt/A Agridex | 0.19 | 50 | 30 | 53 |
| CGA 82725 + 1 qt/A Agridex | 0.19 | 50 | 40 | 37 |
| Fusilade + 0.25% Ag 98 | 0.19 | 37 | 40 | 27 |
| Average | | 46 | 37 | 39 |
| Temperature at application | | 60 | 74 | 77 |
| Relative humidity at application | | 84 | 43 | 37 |

[a] Applied 9-14-81 to barnyardgrass 10 - 14 inches tall. The soil was very wet.

Table 8. JOHNSONGRASS CONTROL WITH POSTEMERGENCE HERBICIDES IN CENTER PIVOT IRRIGATED SOYBEANS

| | | Percent control at soybean harvest | | |
|---|---|---|---|---|
| | lb/A | 1981 | | 1982 |
| Herbicide | (ai) | 8-in grass[a] | 30-in grass[b] | 15-in grass[c] |
| Fusilade +<br>1 qt/A Agridex | 0.25 | -- | -- | 100 a |
| | 0.38 | -- | -- | 97 ab |
| | 0.5 | 98 a[d] | 50 d | 100 a |
| | 0.75 | 100 a | 77 a-c | 100 a |
| CGA-82725 +<br>1 qt/A Agridex | 0.25 | -- | -- | 87 a-c |
| | 0.38 | 100 a | 55 cd | 65 de |
| | 0.5 | 99 a | 65 a-d | 62 de |
| | 1.0 | -- | 73 a-d | -- |
| Poast +<br>1 qt/A Agridex | 0.25 | 73 b | 28 e | 81 a-c |
| | 0.38 | 100 a | 73 a-d | 86 a-c |
| | 0.5 | 100 a | 78 a-c | 99 ab |
| SC 1058 +<br>1 qt/A Agridex | 0.25 | -- | -- | 69 a-c |
| | 0.5 | -- | -- | 54 c |
| | 1.0 | -- | -- | 100 a |
| DowCo 453 +<br>1 qt/A Agridex | 0.25 | -- | -- | 87 a-c |
| | 0.38 | -- | -- | 97 ab |
| | 0.5 | -- | -- | 95 ab |

---

[a] Applied 7-27-81.

[b] Applied 8-26-81.

[c] Applied 6-22-82.

[d] Averages followed by the same letter are not different at the 5% level.

Table 9. SOYBEAN YIELD REDUCTION CAUSED BY JOHNSONGRASS NOT CONTROLLED BY HERBICIDE SPRAY

| | lb/A | Percent soybean yield reduction | | |
|---|---|---|---|---|
| | | 1981 | | 1982 |
| Herbicide | (ai) | 8-in grass[a] | 30-in grass[b] | 15-in grass[c] |
| Fusilade + | 0.25 | -- | -- | 0 |
| 1 qt/A Agridex | 0.38 | -- | -- | 0 |
| | 0.5 | 0 | 27 | 0 |
| | 0.75 | 0 | 25 | 0 |
| CGA-82725 + | 0.25 | -- | -- | 4 |
| 1 qt/A Agridex | 0.38 | 0 | 30 | 6 |
| | 0.5 | 0 | 23 | 6 |
| | 1.0 | -- | 10 | - |
| Poast + | 0.25 | 0 | 23 | 4 |
| 1 qt/A Agridex | 0.38 | 3 | 22 | 1 |
| | 0.5 | 0 | 10 | 6 |
| SC1058 + | 0.25 | -- | -- | 8 |
| 1 qt/A Agridex | 0.5 | -- | -- | 9 |
| | 1.0 | -- | -- | 0 |
| Dowco 453 + | 0.25 | -- | -- | 1 |
| 1 qt/A Agridex | 0.38 | -- | -- | 0 |
| | 0.5 | -- | -- | 1 |
| Untreated | | 27 | 32 | 13 |

[a] Applied 7-27-81 to 10-inch soybeans.

[b] Applied 8-26-81 to 24-inch soybeans.

[c] Soybeans were replanted after hail so were not treated with herbicides.

Table 10. TRADE NAME, COMMON NAME, CHEMICAL NAME, AND MANUFACTURER OF HERBICIDES USED

| Trade name | Common name | Chemical name | Manufacturer |
|---|---|---|---|
| Blazer | Acifluorfen | 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoic acid | Rohm and Haas Co. |
| Ag 98 | -- | Alkyaryl polyoxyethoylene glycols 80% | Rohm and Haas Co. |
| Poast | Sethoxydim | 2-[1-(ethoxyimino)butyl]-5-[2-(ethylthio)-propyl]-3-hydroxy-2-cyclohexene-1-one | BASF Wyandotte Corp. |
| Hoelon | Diclofop | 2-[4-(2,4-dichlorophenoxy)phenoxy] propanoic acid | American Hoechet Corp. |
| Agridex | AL 411 F oil | Petroleum oil + surfactant | Helena Chemical Co.[a] |
| CGA-82725 | -- | 2-Propynyl 2-(4([3,5-dichloro-2-pyrindinyl] oxy)phenoxy)propanoate | Ciba-Geigy Limited |
| Fusilade | Fluazifop-butyl | (±)-Butyl-2-[4-[5-(trifluoromethyl)-2-pyridinyl oxy]phenoxy]propanoate | ICI Americas Inc. |
| SC 1058 | -- | Not available | Stauffer Chemical Co. |
| DowCo 453 | -- | Methyl 2-(4-((3-chloro-5-(trifluoromethyl)-2-pyridinyl)oxy)phenoxy)propanoate | Dow Chemical Co. |

[a] Other trade names are Agri-Oil Plus and Prime Oil.